

WHAT IS CLAIMED IS:

- 1           1. A process for reclaiming residual unreacted ethylene when  
2 preparing copolymers via free-radical-initiated polymerization of one or more vinyl  
3 esters, ethylene, and optionally other ethylenically unsaturated monomers  
4 copolymerizable therewith, at a pressure of from 5 to 100 bar absolute in an aqueous  
5 medium by emulsion or suspension polymerization, comprising depressurizing the  
6 reaction mixture to a lower pressure of from 0.1 to 5 bar absolute, compressing the  
7 gas phase with the residual ethylene-containing gas to a higher pressure of from 2  
8 to 20 bar absolute, and absorbing the gas phase into one or more vinyl esters, and  
9 reusing the resultant mixture in further polymerization.
- 1           2. The process of claim 1, wherein ethylene is absorbed into  
2 vinyl esters in a mixing ratio of from 0.1 to 10% by weight of ethylene, based on  
3 the weight of vinyl esters.
- 1           3. The process of claim 1, which is a continuous process or a  
2 batch process.
- 1           4. The process of claim 2, which is a continuous process or a  
2 batch process.
- 1           5. The process of claim 1, wherein the polymerization process  
2 is terminated at a conversion of from 95 to 99% by weight of the monomers which  
3 are liquid under polymerization conditions, prior to said step of depressurizing.
- 1           6. The process of claim 2, wherein the polymerization process  
2 is terminated at a conversion of from 95 to 99% by weight of the monomers which  
3 are liquid under polymerization conditions, prior to said step of depressurizing.

1                   7.       The process of claim 3, wherein the polymerization process  
2       is terminated at a conversion of from 95 to 99% by weight of the monomers which  
3       are liquid under polymerization conditions, prior to said step of depressurizing.

1                   8.       The process of claim 4, wherein the polymerization process  
2       is terminated at a conversion of from 95 to 99% by weight of the monomers which  
3       are liquid under polymerization conditions, prior to said step of depressurizing.

1                   9.       The process of claim 1, wherein the monomers polymerized  
2       are selected from the group consisting of a mixture of vinyl acetate and ethylene, a  
3       mixture of vinyl acetate and at least one different vinyl ester and ethylene, and a  
4       mixture of vinyl chloride, ethylene and one or more vinyl ester(s).

1                   10.      The process of claim 1, wherein said lower pressure is from  
2       0.1 to 1 bar absolute.

1                   11.      The process of claim 1, wherein said higher pressure is from  
2       5 to 10 bar absolute.

1                   12.      The process of claim 10, wherein said higher pressure is from  
2       5 to 10 bar absolute.